

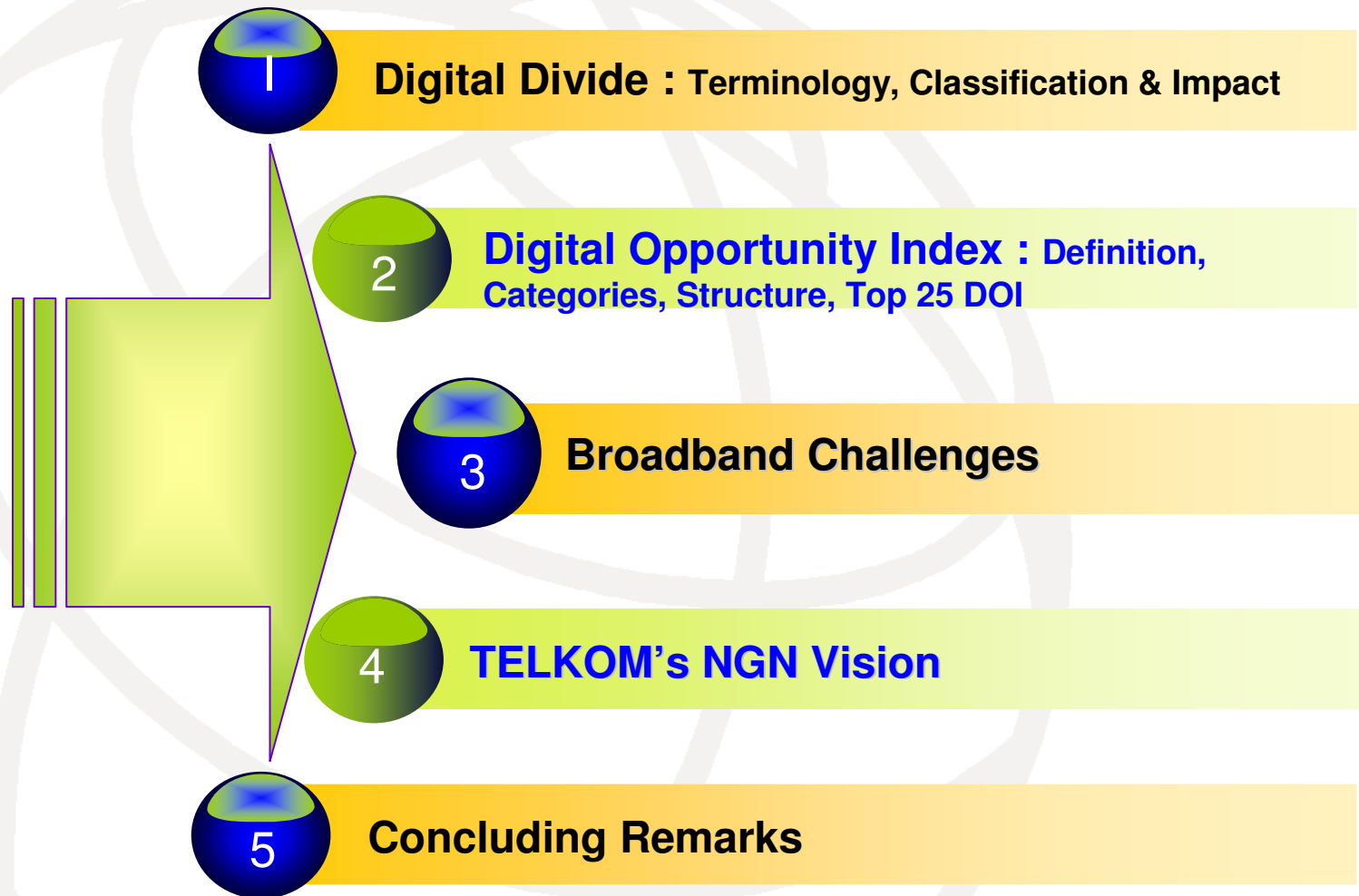
ITU-D Regional Development Forum for the Asia Pasific Region
"NGN and Broadband, Opportunity and Challenges"
Yogyakarta Indonesia 27 – 29 July 2009

Bridging the Digital Divide with Broadband

**High Capacity National Backbone:
An Unavoidable Requirement for the
Smooth Introduction of NGN**

**Mustapa
Wangsaatmadja**
*Head of R&D Center
PT. Telekomunikasi Indonesia*

Outline



Digital Divide Terminology

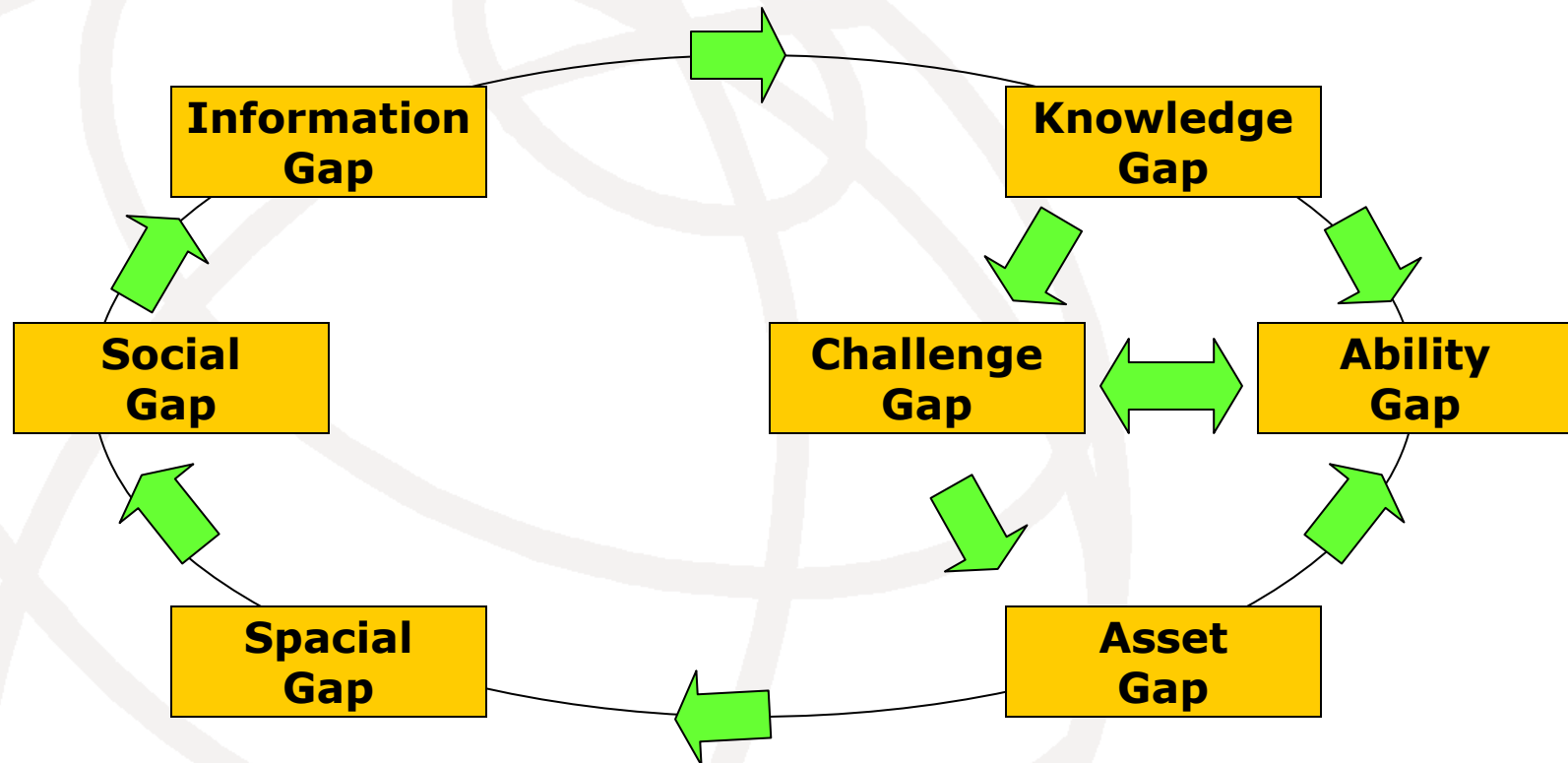
- The term **digital divide** refers to the gap between people with effective access to digital and information technology and those with very limited or no access at all.
- It includes the imbalances in physical access to technology as well as the imbalances in resources and skills needed to effectively participate as a digital citizen.
- In other words, it is the unequal access by some members of society to information and communication technology, and the unequal acquisition of related skills.
- The term is closely related to the knowledge divide as the lack of technology causes lack of useful information and knowledge

Digital Divide Classification

- The digital divide may be classified based on gender, income, race groups, and by locations. The term global digital divide refers to differences in technology access between countries or the whole world.
- The gaps are usually concerned with economic, social and cultural issues, such as income, age, education, gender, ethnic background, and physical handicaps

Sources : - http://en.wikipedia.org/wiki/Digital_divide

Digital Divide Aspects



Impact of Digital Divide

- Economic
 - Macro economic
 - Micro economic
- Social
- Education
- Culture

Digital Opportunity Index : Definition

The Digital Opportunity Index (DOI) is a composite index that measures “digital opportunity” or the possibility for citizens of a particular country to benefit from access to information that is “universal, ubiquitous, equitable and affordable” (WSIS Tunis Commitment, para 10).

<http://www.itu.int/osg/spu/digitalbridges/doi-guide.pdf>

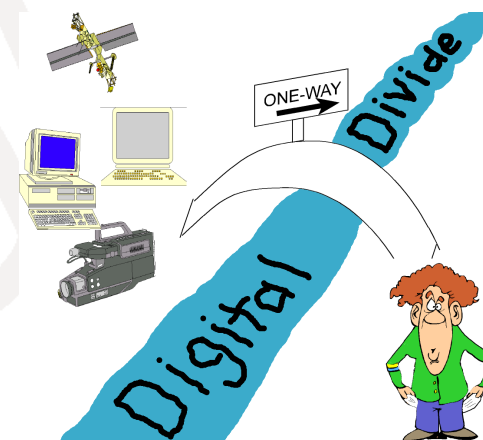
Digital Opportunity Index : Categories

DOI has a flexible modular structure, based on three categories :

- Opportunity measures the basic access and affordability needed to participate in the Information Society in mobile population coverage, Internet access prices and mobile prices.
- Infrastructure includes measures of different networks (fixed lines, mobile cellular subscribers and household Internet access) and devices (households with a computer and mobile Internet).
- Utilization evaluates ICT usage in Internet users and broadband subscribers (fixed and mobile).

Digital Opportunity Index : Indonesia

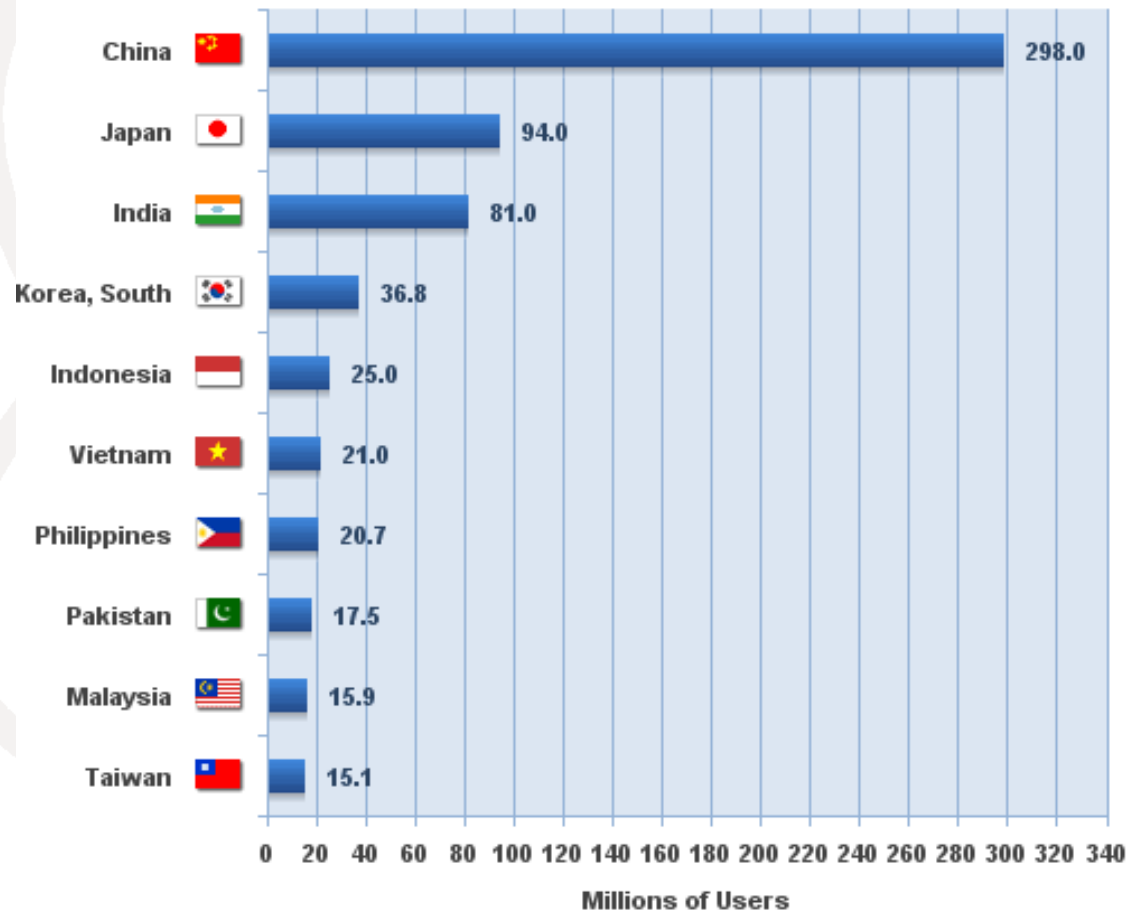
	Economy	Opportunity 2004/2005	Infrastructure 2004/2005	Utilization 2004/2005	DOI 2004/2005	World Rank 2004/2005
61	Georgia	0.92	0.13	0.13	0.59	64
62	Germany	0.99	0.64	0.27	0.63	79
63	Ghana	0.47	0.03	0.01	0.17	148
64	Greece	0.99	0.47	0.07	0.51	43
65	Grenada	0.90	0.39	0.15	0.45	63
66	Guatemala	0.77	0.11	0.02	0.30	118
67	Guinea	0.47	0.01	0.00	0.16	151
68	Guinea-Bissau	0.10	0.02	0.01	0.04	177
69	Guyana	0.72	0.13	0.01	0.29	121
70	Haiti	0.43	0.02	0.00	0.15	153
71	Honduras	0.58	0.07	0.01	0.23	121
72	Hong Kong, China	1.00	0.70	0.38	0.69	5
73	Hungary	0.98	0.43	0.34	0.55	34
74	Indonesia	0.99	0.72	0.37	0.69	4
75	Iran	0.77	0.27	0.07	0.37	105
76	Ireland	0.99	0.55	0.18	0.58	31
77	Israel	0.98	0.57	0.40	0.65	13
78	Italy	0.99	0.54	0.34	0.59	38
79	Jamaica	0.93	0.30	0.18	0.47	53
80	Japan	0.99	0.69	0.46	0.71	2
81	Jordan	0.94	0.23	0.07	0.41	77
82	Kazakhstan	0.94	0.17	0.02	0.38	84
83	Kenya	0.24	0.03	0.01	0.13	164
84	Korea (Rep.)	0.99	0.74	0.64	0.79	1
85	Kuwait	0.99	0.40	0.06	0.49	49
86	Kyrgyzstan	0.55	0.09	0.01	0.22	124
87	Lao P.D.R.	0.40	0.02	0.01	0.14	156
88	Latvia	0.97	0.33	0.17	0.49	48
89	Lebanon	0.96	0.18	0.05	0.40	81
90	Lesotho	0.65	0.03	0.00	0.23	133



<http://www.itu.int/osg/spu/digitalbridges/doi-guide.pdf>

Internet Users Profile

Asia Top 10 Internet Countries



Source: Internet World Stats - www.internetworldstats.com/stats3.htm

Estimated Asia Internet users 657,170,816 for 2009 Q1

Copyright © 2009, Miniwatts Marketing Group

Yogyakarta, Indonesia, 27-29 July 2009

Internet Usage In Asia

Internet Users & Population Statistics for 35 countries and regions in Asia

INTERNET USERS AND POPULATION STATISTICS FOR ASIA						
<u>ASIA REGION</u>	Population (2008 Est.)	% Pop. of World	Internet Users, Latest Data	Penetration (% Population)	User Growth (2000-2008)	Users % of World
<u>Asia Only</u>	3,780,819,792	56.3 %	657,170,816	17.4 %	474.9 %	41.2 %
<u>Rest of the World</u>	2,929,209,278	43.7 %	939,099,292	32.1 %	280.7 %	58.8 %
WORLD TOTAL	6,710,029,070	100.0 %	1,596,270,108	23.8 %	342.2 %	100.0 %

Source : <http://www.internetworldstats.com/stats3.htm>

Latest update March 31, 2009

Population in Asia higher than population in rest of the world,
but internet user still low than rest the world.

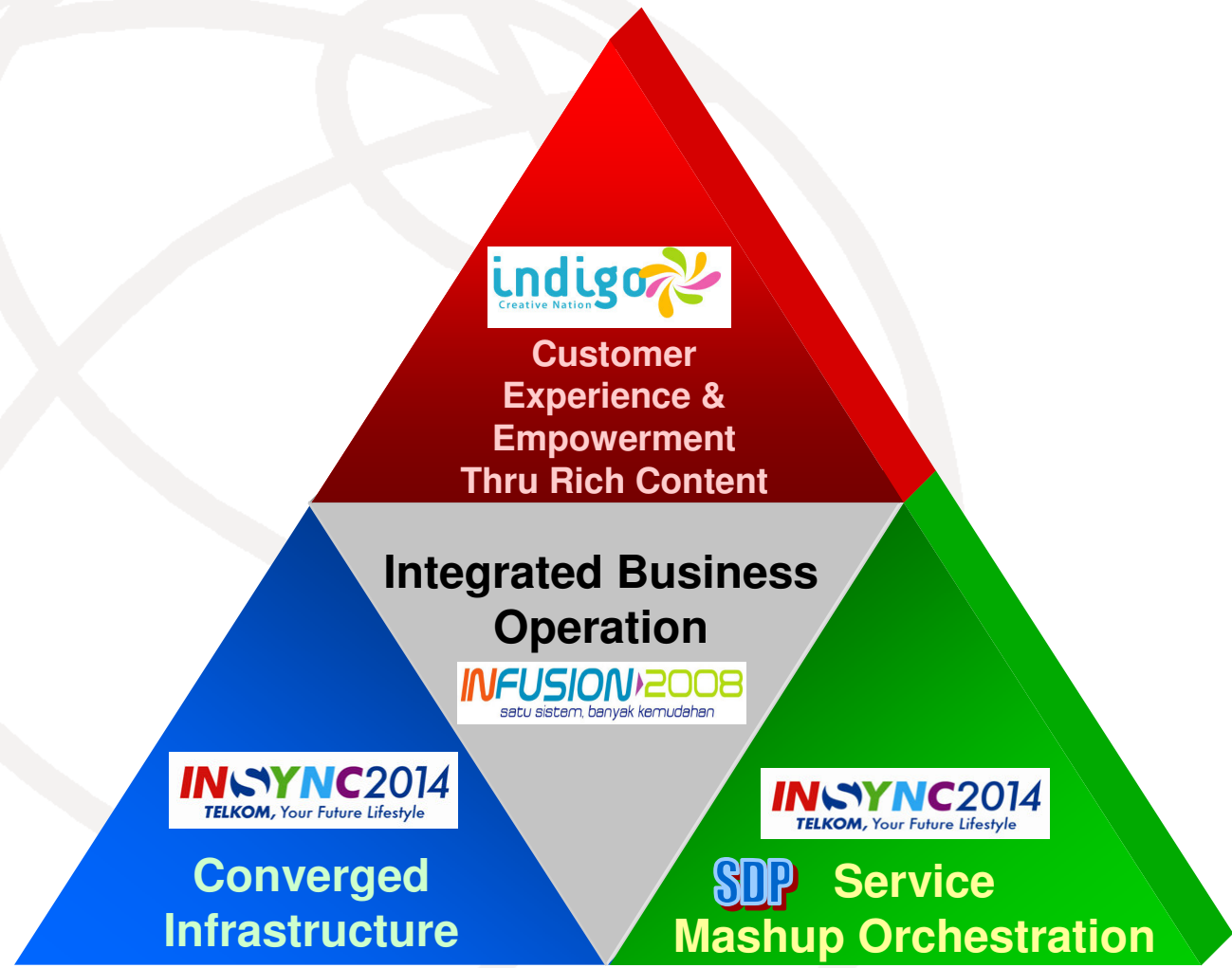
Indonesian Internet Users

	Population (2008 Est.)	Internet Users (Year 2000)	Internet Users March 2009	Penetration (%Popul ation)	User Growth 2000- 2008
BRUNEI	381,371	30,000	176,029	46.20%	486.80%
INDONESIA	237,512,355	2,000,000	25,000,000	10.50%	1150.00%
MALAYSIA	25,274,133	3,700,000	15,868,000	62.80%	328.90%
SINGAPORE	4,608,167	1,200,000	3,104,900	67.40%	158.70%

Source : <http://www.internetworldstats.com/stats3.htm>

- Indonesian Internet Users in 5th Asia Internet population.
- Indonesian Penetration only 10.5 %, , another country around 50%

TELKOM Approach for Addressing New Demands, New Technologies, and Digital Life Style

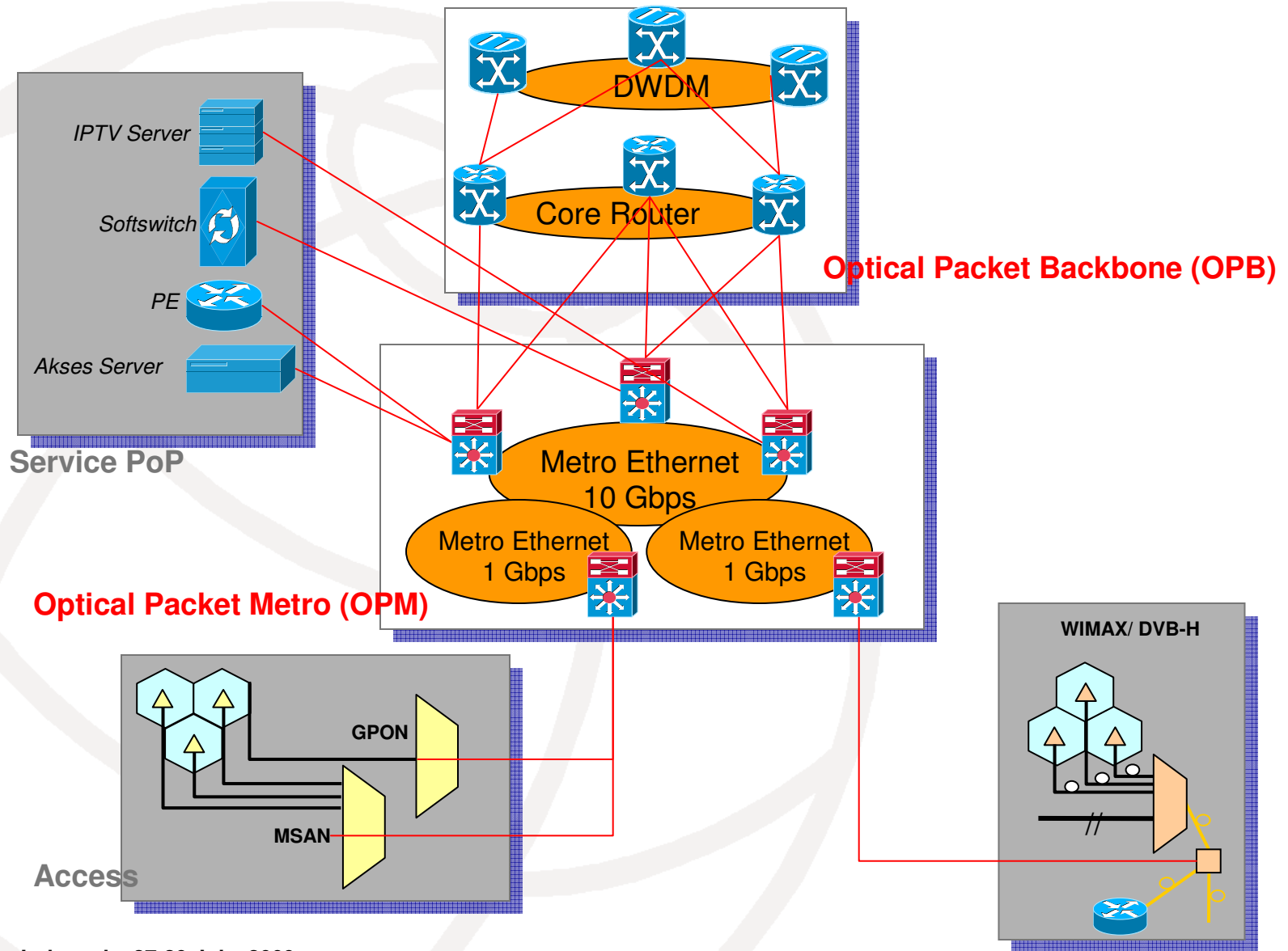


Broadband Challenges

- Optical Packet Backbone (OPB)
 - Optical Backbone (Include Palapa Ring) → National Consortium
 - Tera Router
 - Core Router
- Optical Packet Metro (OPM)
 - Metro Ethernet
 - Selected DWDM Regional Plan
- Access
 - Metro
 - DSL
 - MSAN
 - WIMAX

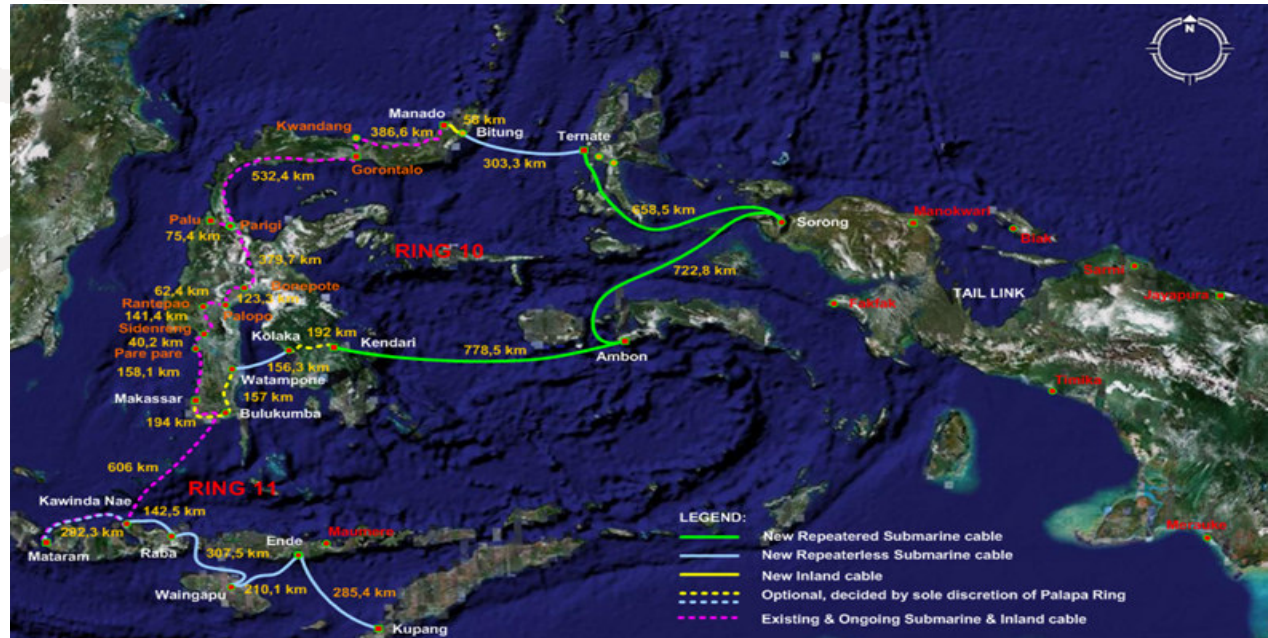
PT TELKOM NGN

Architecture 2014

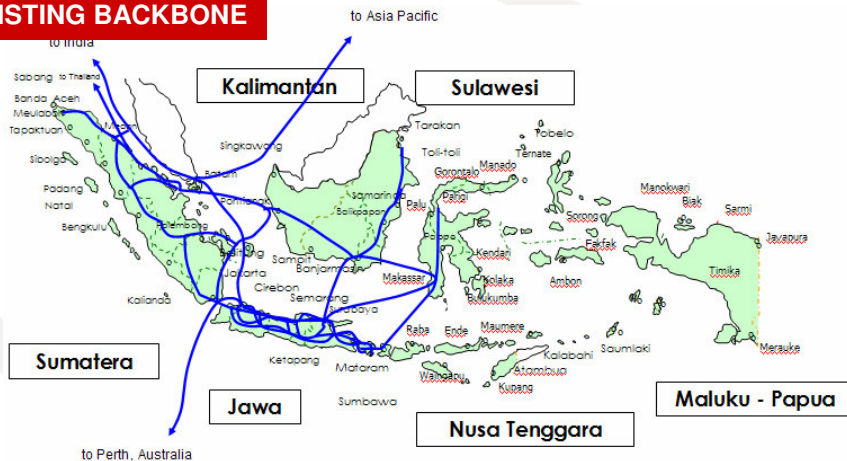


Palapa Ring

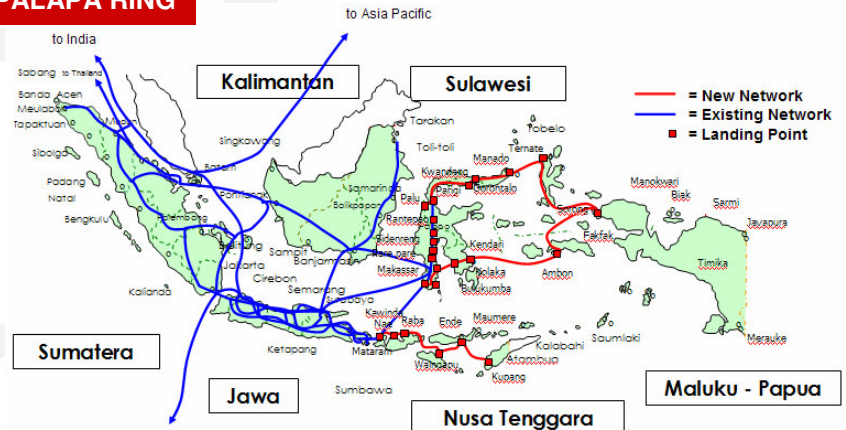
- Development of submarine fiber optic network, connecting 440 districts all over Indonesia
- Endorsed by government, funded by consortium of 4 major Operators (TELKOM, INDOSAT, XL, B-TEL,)



EXISTING BACKBONE



POST PALAPA RING

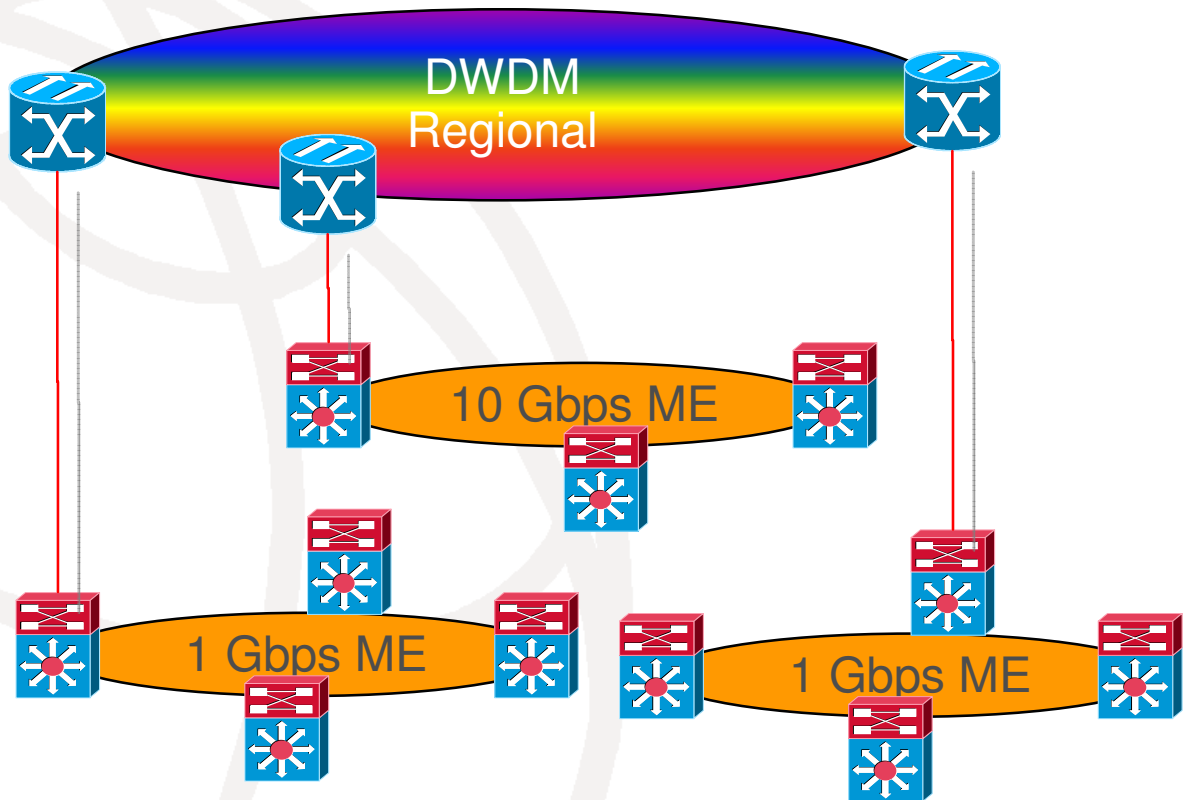


Sources : DR. Basuki Y. Iskandar, Delivering ICT to the People - An Indonesia Case, APRF, May 2009
Yogyakarta, Indonesia, 27-29 July 2009

Selected DWDM Regional Plan

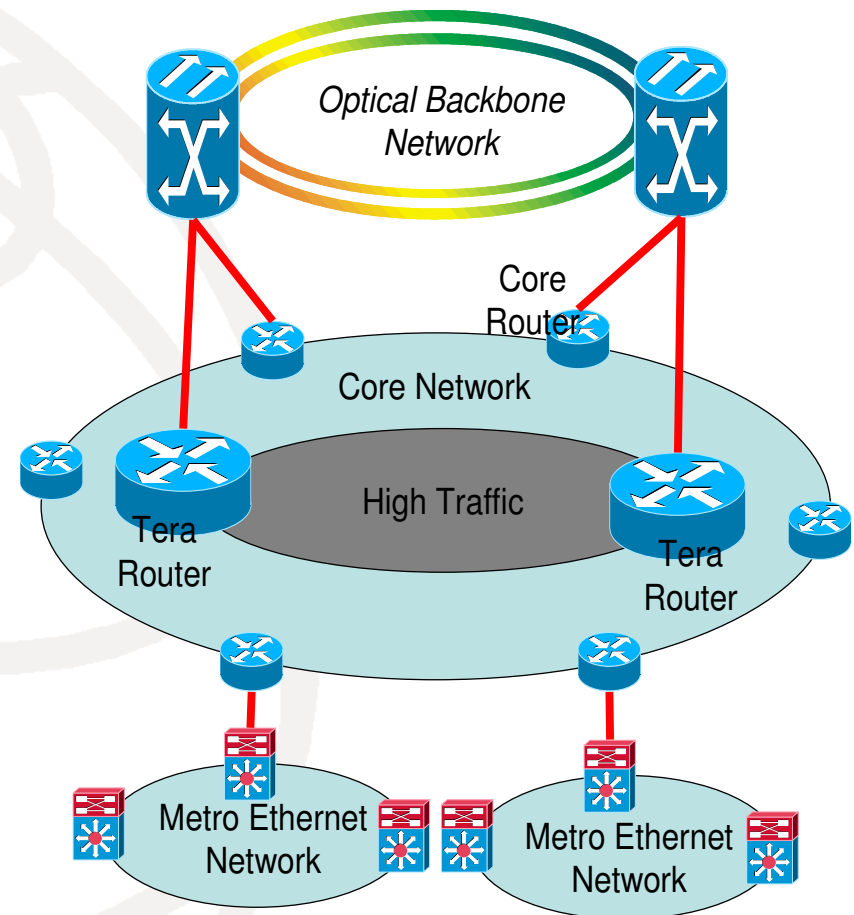
Driver Factor:

- Capacity Expansion
- IP Traffic
- Protection
- New Service (Data Service & Triple Play)

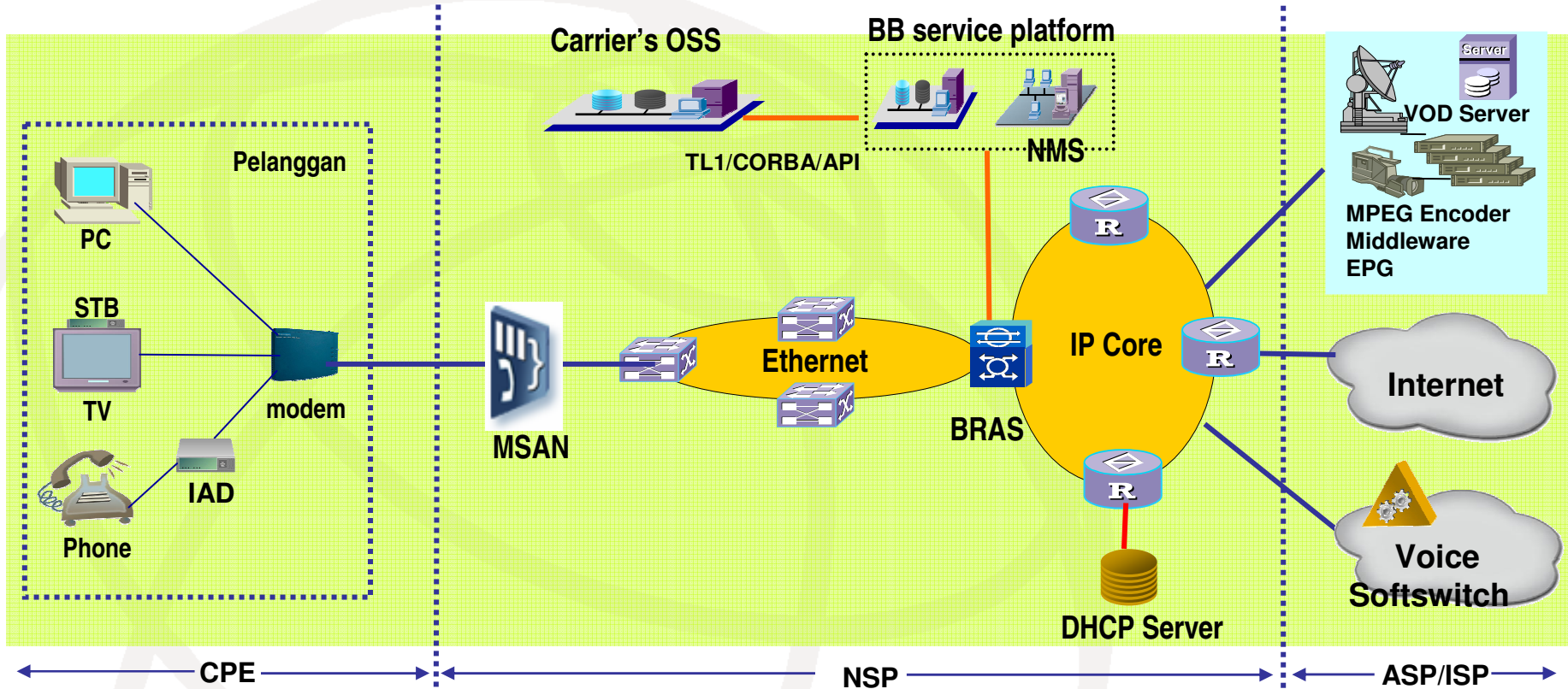


Tera Router: IP Optical Vision

- Tera Router is the technology to fulfill the TELKOM requirement as following:
 - To accommodate 10 Gbps Ethernet traffic from edge network
 - To accommodate the growth of Terabit traffic projection in backbone network
 - To provide simplify architecture 40 Gbps and more for IP Traffic and Optical Network integration through the implementation of IP over Lambda technology
 - To provide seamless integration with existing operational MPLS core and edge network



Telkom Broadband Configuration



- Home Network
 - STB
 - Modem
 - IAD
 - Video Phone
 - WLAN AP

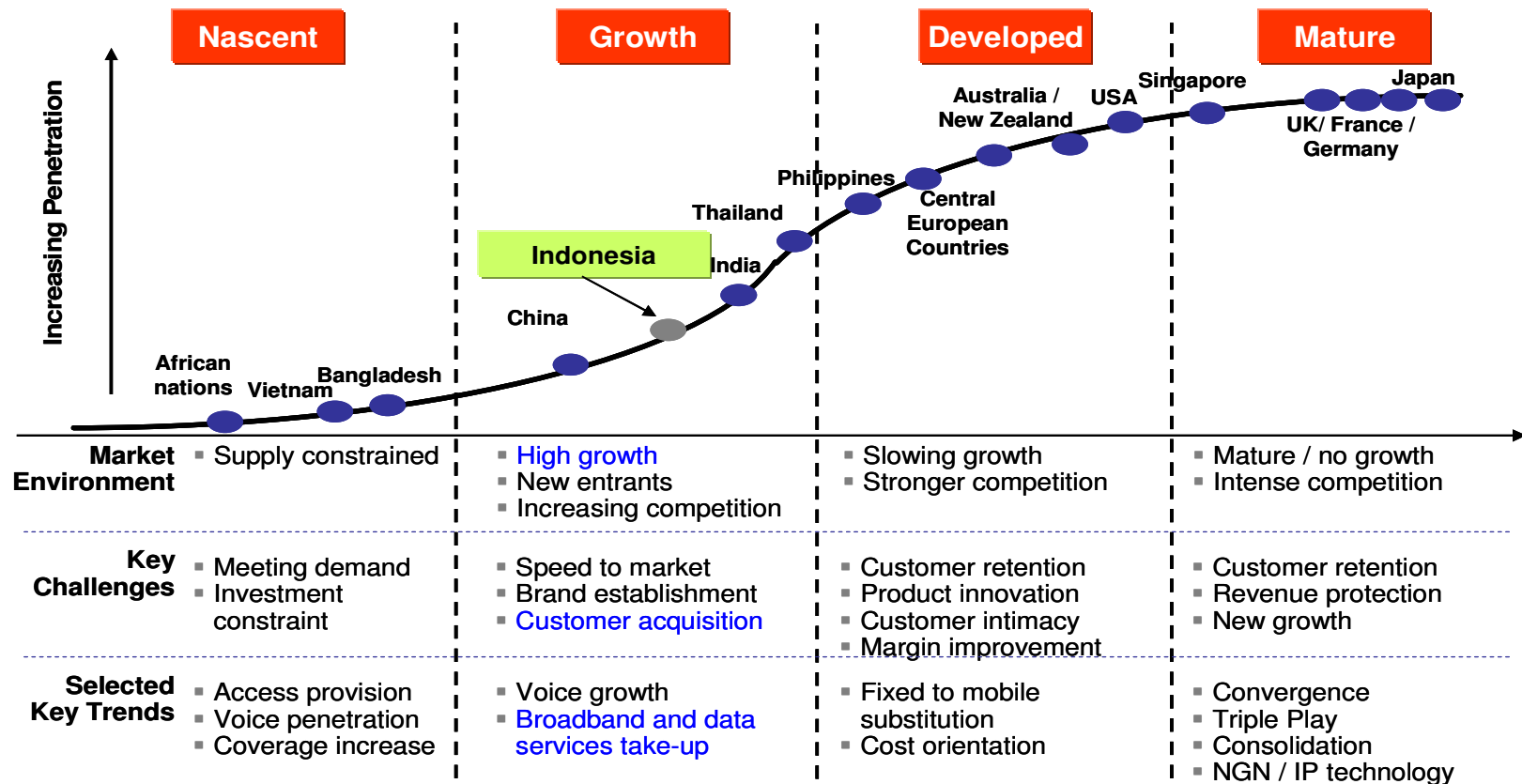
- NSP (Network Service Provider)
 - MSAN
 - DSLAM
 - NG-SDH/Metro Ethernet
 - BRAS
 - NMS
 - NE series IP Core

- ASP (Application Service Provider)
 - EPG
 - Encoder
 - Middleware
 - Video server
 - Softswitch

Yogyakarta, Indonesia, 27-29 July 2009

Indonesian Telecommunication Perspective

Indonesian Market in the Global Context



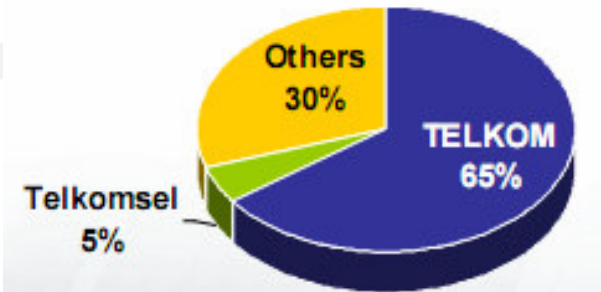
Source: A.T. Kearney analysis

Yogyakarta, Indonesia, 27-29 July 2009

Indonesia Broadband Business

Opportunity in Broadband

- Indonesia has a huge BB market
- In 2007 TLKM Group grabbed ~ 70% of BB subscribers
- Synovate/APJII estimates 2.5 million internet subscribers & 31 millions users in 2010

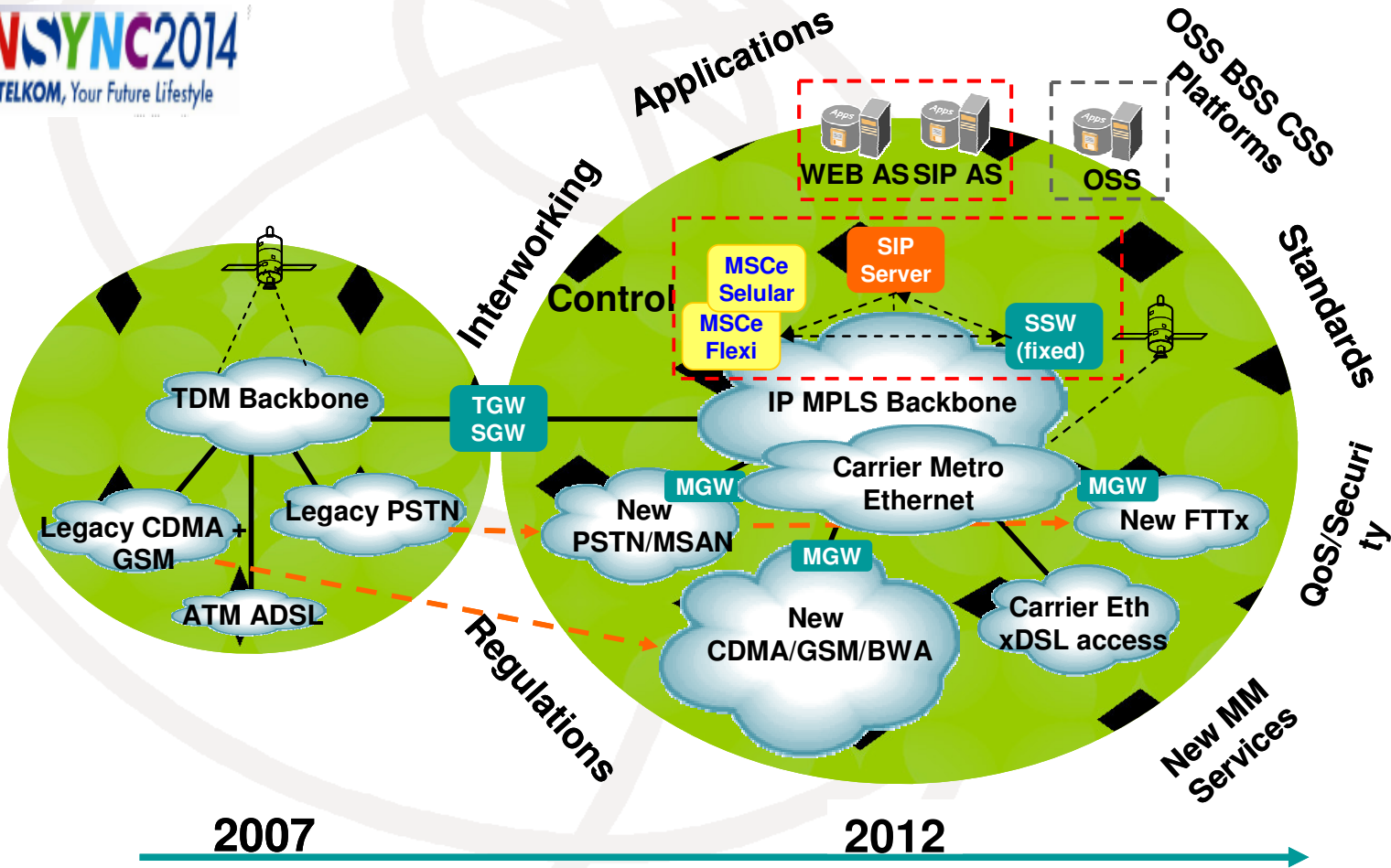


As of September 30, 2008

Source : PT Telekomunikasi Indonesia, Tbk Corporate Presentation to Investors, Jakarta, November 25-26, 2008

TELKOM Migration towards NGN

INSYNC2014
TELKOM, Your Future Lifestyle



Concluding Remarks

- Broadband & NGN can be seen as a strong solution for bridging the Digital Divide & boost the DOI
- High capacity backbone is a prerequisite for Broadband & NGN
- Telco operators can view that broadband & NGN are not only important for their business but also in improving the nations quality of life

Thank you for your attention!

Спасибо
Russian

ありがとうございました
Japanese

Gracias
Spanish

நன்றி
Tamil

Obrigado
Brazilian Portuguese

Terima Kasih

감사합니다



Grazie
Italian

Merci
French

Danke
German

Thank You
English

شكراً
Arabic

多謝
Traditional Chinese

ขอบพระคุณ
Thai

धन्यवाद
Hindi